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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,116	09/04/2001	Kyeong Jin Kim	8733.450.00	1729

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EXAMINER
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BOOTH, RICHARD A

ART UNIT	PAPER NUMBER
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2812

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/944,116

Applicant(s)

KIM, KYEONG JIN

Examiner

Richard A. Booth

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 21-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0106.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/6/06 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 USC 103(a) as being unpatentable over Kim et al., GB 2,343,012A in view of Holmberg et al., U.S. Patent 5,731,216 or Byun et al., U.S. Patent 5,917,199.

Kim et al. shows the invention substantially as claimed including a multi-domain device, comprising: first and second substrates (31,33); data and gate lines on the first substrate in first and second directions to define a plurality of pixel regions; a pixel electrode 13 in at least one pixel region, having at least one slit pattern 19; a dielectric

frame 41 within the pixel regions on the second substrate and formed overlying the common electrode 17 to define a plurality of domains (see page 9, lines 3-7); and a liquid crystal layer between the first and second substrates including a chiral dopant (see page 8, line 7 to page 11, line 12).

Note that the dielectric frame will inherently block at least a portion of the light which is transmitted therethrough and furthermore that the dielectric frame can be made of carbon black and a mixture of either acrylic resin or polyimide which inherently serves as a light shielding layer due to the presence of the carbon black (see page 24, lines 11-18).

Kim et al. fails to expressly disclose a first electrode and a second electrode on the first substrate, the first and second electrodes forming a storage capacitor.

Both Holmberg et al. and Buyn et al. discloses forming a storage capacitor including first and second electrodes (see figures 2 and figures 3 and their description). In view of these disclosures, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the storage capacitors of Holmberg et al. or Byun et al. on the first substrate of Kim et al. because a storage capacitor is an important part of a highly functional LCD display.

Regarding the liquid crystal layer in the first sub-pixel region aligning differently from the liquid crystal layer in the second sub-pixel region when a voltage is applied between the pixel and the common electrode, note that the primary reference of Kim et al. shows embodiments which read on the claims as amended (see, for example, figs. 4A-14B and their descriptions).

With respect to claim 2, the TFT of Kim is formed on the pixel region which is at a portion between the gate and data lines (see page 1, lines 17-22).

Concerning claims 3-5 and 11-12, note that the dielectric frame of Kim et al. can contain BCB or acrylate (see page 3, lines 25-30), a material with a dielectric constant the same or smaller than the liquid crystal layer (see page 10, line 27 to page 11, line 2), or carbon black (see page 24, lines 11-18).

With respect to claims 6-8 and 13-14, note the presence in Kim et al. of color filter layers 23 and a common electrode 17 on the second substrate, an alignment layer, and phase difference film 29 (see page 12, lines 1-8).

Claims 16-20 are rejected under 35 USC 103(a) as being unpatentable over Kim et al., GB 2,343,012A in view of Holmberg et al., U.S. Patent 5,731,216 or Byun et al., U.S. Patent 5,917,199 as applied to claims 1-15 above, and further in view of den Boer et al., U.S. Patent 5,656,824.

Kim et al., Holmberg et al., and Byun et al. are applied as above but fails to expressly disclose a U-shaped TFT with a source electrode surrounding the drain electrode in a U shape.

Den Boer et al. discloses a TFT 80 with a U-shaped channel where the drain 24 surrounds the source 22 in a U-shape (see fig. 7 and col. 9-line 40 to col. 10-line 3). Note that a field effect transistor based device is symmetrical so the source and drain are interchangeable. In view of this disclosure, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify the device of Kim et al. modified by Holmberg et al. or Byun et al. so as to form a TFT that is U-shaped because this will eliminate overlay errors which occurred in previous TFT devices.

### ***Response to Arguments***


Applicant's arguments filed 2/22/06 have been fully considered but they are not persuasive. Applicant argues that the references cited above fail to disclose the claimed sub-pixel structure. However, regarding the liquid crystal layer in the first sub-pixel region aligning differently from the liquid crystal layer in the second sub-pixel region when a voltage is applied between the pixel and the common electrode, note that the primary reference of Kim et al. shows embodiments which read on the claims as amended (see, for example, figs. 4A-14B and their descriptions).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A. Booth whose telephone number is (571) 272-1668. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard A. Booth  
Primary Examiner  
Art Unit 2812

April 10, 2006